

## ATMOSPHERIC ELECTRICITY.

Numerical statistics relative to auroras and thunderstorms are given in Table X, which shows the number of stations from which meteorological reports were received, and the number of such stations reporting thunderstorms (T) and auroras (A) in each State and on each day of the month, respectively.

The dates on which reports of thunderstorms for the whole area were most numerous were: 5th, 64; 6th, 52; 28th, 93. Thunderstorm reports were most numerous in: Louisiana, 45; North Carolina, 35; Mississippi, 30; Florida and New Jersey, 25.

Thunderstorm reports were most frequent in: Louisiana, on eleven days; Mississippi, nine days; Florida, Georgia, and Texas, eight days; North Carolina, seven days.

*Auroras.*—The evenings on which bright moonlight must have interfered with observations of faint auroras are assumed to be the four preceding and following the date of full moon, viz, the 1st and 2d, and also from the 24th to the 29th, inclusive. On the remaining twenty-one days of this month 93 reports were received, or an average of about 4 per day. The dates on which the number of reports especially exceeded this average were: 3d and 12th, 7; 8th, 16; 9th, 10; 14th, 8.

The ratio of auroras to observers was a large percentage in: Vermont, 44; New Hampshire, 38; Montana, 33; North Dakota, 28.

Auroras were reported most frequently in: Minnesota, on eight days; New Hampshire and North Dakota, seven days; Kansas, Montana, South Dakota, and Vermont, six days.

## CANADIAN REPORTS.

No thunderstorms were reported. Auroras were reported as follows: 1st, Prince Albert; 2d, Winnipeg and Prince Albert; 3d, Father Point and Quebec; 4th, Prince Albert; 5th and 6th, Minnedosa; 7th, Winnipeg; 8th, St. Andrews and Minnedosa; 9th, Minnedosa; 10th, Quebec and Medicine Hat; 12th, Quebec; 13th, Minnedosa; 15th, Father Point, Ottawa, and Minnedosa; 18th, Medicine Hat; 19th, Minnedosa and Medicine Hat; 21st, Father Point; 22d, Winnipeg and Minnedosa; 25th, Quebec.

## INLAND NAVIGATION.

The *extreme and average stages of water* in the rivers during the current month are given in Table VIII, from which it appears that the only rivers that rose above the danger line during February were the Tennessee at Johnsonville, which was 5.5 feet above on the 6th, and the Congaree, Columbia, S. C., which was 2.8 feet above on the 7th. The lower Mississippi rose steadily during the month and was highest on the 29th at New Orleans when it was within 0.1 foot of the danger line. The upper Mississippi and the Missouri remained frozen over during the month, and the high water in the lower Mississippi was largely due to the inflow from the Ohio, Cumberland, and Tennessee. On the Pacific Coast the Sacramento was highest on the 1st, when it was within 2.3 feet of the danger line.

## ICE IN RIVERS AND HARBORS.

The state of ice in rivers and harbors is shown in detail on the Charts of Snow on the Ground, published weekly by the Weather Bureau, from which it appears that there was a general diminution in the thickness of ice, and on February 24 the condition was about as follows: (Thickness in inches.)

*Missouri River.*—Williston, 26.0; Bismarck, 20; Pierre, 23; Yankton, 12.5; Sioux City, 15; Omaha, 8.

*Red River of the North.*—Moorhead, 28.

*Upper Mississippi River.*—St. Paul, 14; La Crosse, 14; Dubuque, 10; Davenport, 11.

*Hudson River.*—Albany, 13.

*Lake Superior.*—Duluth, 23; Marquette, 8; Sault Ste. Marie, 18.5.

*Lake Michigan.*—Greenbay, 10; Milwaukee, 0; Chicago, 0; Grand Haven, 6.

*Lake Huron.*—Alpena, 7; Port Huron, 8.

*St. Clair River.*—Detroit, 7.

*Lake Erie.*—Toledo, 6; Sandusky, 8; Cleveland, 10; Erie, 9; Buffalo, 10.

*Lake Ontario.*—Oswego, 15; Rochester, 8.

*Ohio River.*—Parkersburg, 2.

*Delaware River.*—Philadelphia, 3.5.

*Raritan River.*—New Brunswick, 3.0.

## METEOROLOGY AND MAGNETISM.

By Prof. FRANK H. BIGELOW.

For a description of the methods of constructing the tables and curves of Chart V, see the WEATHER REVIEW for October, 1895, and January, 1896. The numbers in the columns H. and D. are added respectively to the mean values for Washington and Toronto, i. e.,  $H=0.18250$ ;  $D=175.0$ . The values of the vertical forces are omitted, as well as  $dz, s, a$ , which depend upon it. It may be remarked that a cold wave occurred over the eastern portions of the Lake Region, February 19–22, during which a marked nonconformity in the synchronism of the watch-magnet curve took place.

## MEXICAN CLIMATOLOGICAL DATA.

In order to extend the isobars and isotherms southward so that the students of weather, climate and storms in the United States may properly appreciate the influence of the conditions that prevail over Mexico the Editor has compiled the following table from the Boletina Mensual for February, 1896, as published by the Central Meteorological Observatory of Mexico. The data there given in metric measure have, of course, been converted into English measures. The barometric means are as given by mercurial barometers under the influence of local gravity and therefore need reductions to standard gravity, depending upon both latitude and altitude; the influence of the latter is rather uncertain, but that of the former is well known. For the sake of conformity with the other data published in this REVIEW these corrections for local gravity have not been applied.

Mexican data for February, 1896.

Stations.	Altitude. <i>Feet.</i>	Mean pres- sure. <i>Inch.</i>	Mean tem- perature. <i>° F.</i>	Relative humidity. <i>%</i>	Precipita- tion. <i>Inch.</i>	Prevailing direction.	
						Wind.	Cloud.
Aguascalientes.....	6,112.3	.....	.....	.....	T.	.....	.....
Campeche.....	40.4	.....	.....	.....	.....	.....	.....
Colima (Seminario).....	.....	.....	.....	.....	.....	.....	.....
Colima.....	1,291.7	.....	73.0	.....	.....	.....	.....
Culliacan.....	112.2	29.82	68.4	55	0.24	sw.	e.
Guadalajara (H. de B.).....	5,141.2	24.97	63.3	81	0.45	.....	.....
Guadalajara (Obs. S. Est.).....	5,186.4	.....	.....	.....	.....	.....	.....
Guanajuato.....	6,761.3	23.65	57.7	41	0.04	wsu.	sw.
Jalapa.....	4,757.3	25.52	58.5	78	1.58	s.	.....
Lagos (Liceo Guerra).....	6,274.5	24.11	57.4	44	0.17	nw.	sw.
Leon.....	5,901.0	24.27	58.6	37	0.07	wsu.	sw.
Mazatlan.....	24.6	29.97	69.1	72	0.27	nw.	sw.
Merida.....	50.2	29.97	72.3	67	1.25	ne.	n.
Mexico (Obs. Cent.).....	7,488.7	23.04	55.9	48	0.04	nw.	sw.
Mexico (E. N. de S.).....	7,480.5	23.05	57.9	52	0.02	.....	.....
Morelia (Seminario).....	6,401.0	23.23	63.0	54	0.16	sw.	w.
Oaxaca.....	5,164.4	25.06	65.7	55	0.00	wnw.	sw.
Pabellon.....	6,312.4	.....	.....	.....	.....	.....	.....
Pachuca.....	7,956.3	22.60	54.5	65	0.10	.....	.....
Progreso.....	.....	.....	.....	.....	.....	.....	.....
Puebla (Col. d'Est.).....	7,118.2	.....	.....	.....	.....	.....	.....
Puebla (Col. Cat.).....	7,112.0	23.36	58.5	51	0.06	.....	.....
Queretaro.....	6,069.7	24.15	58.6	46	0.04	wsu.	w.
Real del Monte (E. de H.).....	9,095.2	.....	.....	.....	.....	.....	.....
Saltillo (Col. S. Juan).....	5,376.7	24.87	52.2	65	2.24	sw.	sw.
San Luis Potosi.....	6,201.9	24.10	55.6	53	0.12	w.	w.
Silao.....	6,063.1	.....	.....	.....	.....	.....	.....
Tacambaro.....	.....	.....	.....	.....	.....	.....	.....
Tacubaya (Obs. Nac.).....	7,620.2	22.92	54.9	50	0.03	nw.	.....
Tampico (Hos. Mil.).....	.....	.....	.....	.....	.....	.....	.....
Tehuacan.....	5,152.8	.....	.....	.....	.....	.....	.....
Toluca.....	8,612.4	21.86	51.1	44	0.02	wsu.	wsu.
Trejo (Hac. Silao, Gto.).....	.....	.....	.....	.....	.....	.....	.....
Trinidad (near Leon).....	6,010.1	.....	.....	.....	.....	.....	.....
Veracruz.....	47.9	.....	.....	.....	.....	.....	.....
Zacatecas.....	8,015.2	22.48	50.4	48	0.89	sw.	sw.
Zapotlan (Seminario).....	5,124.8	25.06	62.8	.....	0.08	se.	sw.